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APPLICATION

Of

ROBERT D. HARRIS

For

UNITED STATES LETTERS PATENT

On

PORTABLE LUMBAR SUPPORT AND VARIABLE RESISTANCE EXERCISE DEVICE

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PORTABLE LUMBAR SUPPORT AND VARIABLE RESISTANCE EXERCISE DEVICE

RELATED APPLICATION

This application claims priority to United States Provisional Application Serial No. 60/401,445, filed August 5, 2002.

BACKGROUND OF THE INVENTION

The present invention relates generally to lumbar support devices as well as exercise devices. More particularly, the present invention relates to a lumbar support device which also functions as a back and abdominal exercise device that is lightweight, portable, collapsible, and which provides variable support and resistance through elastic components.

Traditional lumbar support devices are limited in their versatility. Many are foam-filled or air-filled bags or pillow-like devices which are placed between a individual's lower back and the seatback of a chair. Such devices offer only static lumbar support. They do not allow the user to move or flex the lower back against any device-provided resistance, nor do such devices permit the user to easily vary the amount of support or resistance provided by the device.

Traditional back and abdominal exercise devices are also limited in their versatility. For example, an individual cannot use most such devices while he or she is seated in an ordinary chair at work school, church, home, or in a care or airplane. Nor are most traditional back and abdominal exercise devices collapsible and storable in an area as small as the inside of a briefcase or underneath a car or airplane seat.

Accordingly, there is a need for a lumbar support device capable of providing a user-defined amount of dynamic lumbar support, which lumbar support acts as a variable amount of resistance against which a user may flex and move his or her lower back, thereby exercising the muscles of the

lower back and abdomen, and causing blood to flow therethrough. Such a lumbar support and exercise device should be lightweight, portable, and collapsible. It should also allow an individual to use the device seated in an ordinary chair at work, school, church, home, or in a car or airplane. The device should be collapsible and storable in a very small area, such as inside a briefcase or under a care or airplane seat. The present invention fulfills all these needs and provides other related advantages.

SUMMARY OF THE INVENTION

The present invention resides in a portable lumbar support and abdominal exercise device which provides a user-defined amount of dynamic lumbar support, and which can provide a variable amount of resistance to strengthen a user's back and abdominal muscles. The device is collapsible and storable in a very small area so as to be easily transported and used in places which would not otherwise support such exercise devices.

The device generally comprises a frame having a base and first and second arms extending from opposite ends of the base. In a particularly preferred embodiment, the first and second arms extend at an angle with respect to the base, such that the arms accommodate a user's back to fit therebetween. The base is typically planar, to allow the device to be placed against a vertical or horizontal generally planar support. The first and second arms are preferably collapsible relative to the base, such as by pivotally attaching the first and second arms to the base to allow them to be folded into an open in use position, and in a closed storage and transportation position. A stop is associated with each of the arms to limit pivotal movement of each arm relative to the base.

An elastomeric resistance band extends between the first and second arms to provide lumbar support and abdominal exercise resistance to movement of the user's back towards the base of the frame. Typically, the elastomeric resistance band is removably attached to free ends of the first and second arms. Notches are typically formed on each arm which are

configured to removably accept an end of the elastomeric resistance band therein. In a particularly preferred embodiment, the device accommodates a plurality of elastomeric resistance bands such that the support and resistance can be varied according to user need.

Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate the invention. In such drawings:

FIGURE 1 is a perspective view of a frame of the present invention, illustrating arms thereof being pivoted to an in-use position;

FIGURE 2 is a perspective view of a particularly preferred embodiment of the present invention;

FIGURE 3 is a side elevational view of the device of FIG. 2;

FIGURE 4 is a side elevational view of the frame of FIG. 1 in a collapsed and folded state;

FIGURE 5 is a top plan view of the device of the present invention disposed between a user's back and a support surface, in accordance with the present invention;

FIGURE 6 is a view similar to FIG. 5, illustrating movement of a user's back in response to abdominal exercises; and

FIGURE 7 is a side elevational view, illustrating the device of the present invention disposed between a user's back and a seatback of a chair.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings for purposes of illustration, the present invention resides in a portable lumbar support and abdominal exercise

device, generally referred to by the reference number 10. As will be more fully described herein, the device 10 provides a user-defined amount of lumbar support, as well as a variable amount of resistance against which a user may flex and move his or her lower back, thereby exercising the muscles of the lower back and abdomen.

With reference now to FIGS. 1-4, the device includes a frame, 12 including a base 14 which is typically planar so as to be positioned against a generally planar horizontal or vertical supporting surface, as will be described more fully herein. First and second arms 16 and 18 extend from opposite ends of the base 14. The arms 16 and 18 support one or more elastomeric resistance bands 20 extending therebetween, as illustrated in FIGS. 2 and 3.

The arms 16 and 18 extend from the base 14 at an angle such that a user can place his or her lower back therebetween. In a particularly preferred embodiment, as illustrated, the first and second arms 16 and 18 are pivotally connected to the base 14, such as by hinges 22 or the like. This enables the frame 12 to be folded compactly for storage and transportation, as illustrated in FIG. 4, and the arms 16 and 18 pivoted into an upward and open position, as shown in FIGS. 1-3. An particularly beneficial aspect of the present invention is that the arms 16 and 18 can be collapsible with respect to the base 14 such that the device 10 can be made compact for storage in a small area, such as a briefcase or the like, and transported with the user as he or she travels. Thus, the arms 16 and 18 can be collapsible by other means known in the art as well and still fulfill the primary intended benefits of the present invention.

Stops 24 are associated with either the base 14 or the arms 16 and 18 to limit the pivotal movement of the arms 16 and 18, such that the space between the arms 16 and 18 can be controlled in the open position. Such stops 24 may comprise an angled lip extending from the base 14, as illustrated. Thus, as the arms 16 and 18 are brought upwardly, as shown in FIG. 1, lower portions of the arms 16 and 18 contact the lip 24 so as to prevent the movement of the arms 16 and 18 further in the upward direction.

The arms 16 and 18 are angled with respect to the base 14 to permit a lower back or waist area of a user to fit between the free ends of the arms 16 and 18.

The one or more elastomeric resistance bands 20 are removably connected to the arms 16 and 18 such that the device 10 can be disassembled and folded for storage and transportation purposes. One manner of removably connecting such elastomeric resistance bands 20 to the arms 16 and 18 includes the provision of slots or notches 26 formed at the free end edge of the arms 16 and 18. The slots or notches 26 are of reduced cross-sectional area at the free edge such that the resistance bands which have enlarged ends 28 are unable to extend therethrough. Such enlarged ends 28 may be formed, e.g. by creating knots at the ends of the elastomeric resistance bands 20, or the insertion of a ball bearing or the like into the end of surgical tubing or other resiliently flexible bands. The resistance band 20 is inserted through the notch 26 such that the enlarged end 28 extends outward of the arms 16 or 18, and the band is stretched so that it extends between the arms 16 and 18, with the opposite end being inserted into a corresponding notch 26 in a similar manner. The one or more elastic bands 20 are typically taut in their extended state so as to resist stretching. However, due to the elastic nature of the resistance bands 20, a degree of stretch can be attained depending upon the force applied thereto.

The present invention replaces traditional static lumbar support devices as it can be used almost anywhere as a portable dynamic lumbar support device, which is also capable of exercising the back and abdominal muscles in a variety of ways. With reference now to FIGS. 5-7, the device 10 is illustrated with its base 14 against the seatback 30 of a chair 32. The one or more elastomeric resistance bands 20 engage the user's 34 back, typically at about the lumbar portion thereof. It will be readily understood by those skilled in the art that the device 10 could be placed against other surfaces, such as a wall or even the floor. With the device 10 thus positioned, when the individual user 34 sits against the device 10 the elastic resistance bands 20 should run parallel to his or her waist and be in contact

with his or her lower back. The resistance provided by the bands 20 is such that when the user 34 is in a seated position as described, his or her lower back will only be a short distance from the base 14, the one or more resistance bands 20 exerting a forward force on the user's lower back, thereby providing lumbar support.

The continuous forward force applied to the lower back causes the user 34 to occasionally desire to stretch the lower back muscles by pressing the lower back rearwardly against the resistance bands 20. Of course, the user 34 can actively exercise by contracting the abdominal muscles and pressing the lower back rearwardly against the resistance bands 20 as well. Thus, the lower back muscles and abdominal muscles movement is resisted by the elastomeric resistance bands 20 and are strengthened.

The amount of support and resistance provided by the device 10 can be easily varied by the user depending upon the number of elastomeric resistance bands 20, or the elastomeric and resilient characteristics of each band. Typically, the greater number of bands 20, the greater the lumbar support and resistance provided.

The seated use of the present invention may be done while the user is seated in any traditional seat or chair, such as those normally found at work, school, church, home, in a car or airplane. Similar exercises may be performed using the device 10 of the present invention in a prone position upon a floor or other horizontal surface.

After use, the device 10 may be disassembled and collapsed for easy storage. The one or more resistance bands 20 are removed, and the arms 16 and 18 are folded back upon the base 14, as shown in FIG. 4. The device 10 is extremely compact when collapsed and can even fit within a briefcase for use during business travel and the like.

Although several embodiments of the present invention have been described in detail for purposes of illustration, various modifications of each may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited, except as by the appended claims.